Claims:

1. A method of oxidizing work pieces comprising the steps of:

containing a plurality of work pieces in a processing vessel which has a predetermined length and is capable of forming a vacuum therein, and

oxidizing surfaces of the work pieces in an atmosphere including active oxygen species or active hydroxyl species which are generated by supplying an oxidative gas and a reductive gas into the processing vessel to interact the gases, the oxidative gas and the reductive gas being respectively supplied in the vessel in the longitudinal direction, wherein

the reductive gas is supplied additionally from at least two or more independently controlled gas nozzles located at separate locations in the longitudinal direction of the processing vessel; and

the gas flow rate through each nozzle is set depending on any combination of the work pieces consisted of product wafers and dummy wafers or monitor wafers in the processing vessel.

2. A method of oxidizing work pieces comprising the steps of:

containing a plurality of work pieces in a processing vessel which has a predetermined length and is capable of forming a vacuum therein, and

oxidizing surfaces of the work pieces in an atmosphere including active oxygen species or active hydroxyl species which are generated by supplying an oxidative gas and a reductive gas into the processing vessel to interact the gases, the oxidative gas and the reductive gas being respectively supplied in the vessel in the longitudinal direction, wherein supplying at least three independently controlled reductive gas nozzles are located at separate locations in the longitudinal direction of the processing vessel; and

controlling the gas flow rates through each nozzle is set depending on any combination of the work pieces consisted of product wafers and dummy wafers or monitor wafers in the processing vessel.

3. The method of oxidizing work pieces according to claim 1 or 2, wherein

containing the work pieces in the processing vessel consist of any number of product wafers.

4. Th method of oxidizing work pieces according to claims 1 or 2, wherein

controlling the flow rate through each reductive gas nozzle is set based on the desired film thicknesses.

5. The method of oxidizing work pieces according to claims 1 or 2, wherein

controlling the flow rate through each reductive gas nozzle is set based on the desired longitudinal concentration profile of active oxygen species or the active hydroxyl species within the processing vessel.

6. An oxidation system comprising:

a holding means which holds a plurality of work pieces at predetermined pitches;

a processing vessel which has a predetermined length for containing the holding means, and is capable of forming a vacuum therein;

a heating means which heats the work pieces;

an oxidative gas supply means which supplies an oxidative gas into the processing vessel;

a reductive gas supply means which supplies a reductive gas into the processing vessel including at least three independently controlled reductive gas nozzles for supplying the reductive gas to separate locations along the longitudinal direction of the processing vessel; and

a system controller controlling the individual gas flow rate of the reductive gas supplied from the reductive gas nozzles.

7. The oxidation system according to claim 6, wherein

the work pieces held by the holding means consist of any number of product wafers.

8. The oxidation system according to claim 6 and 7, wherein

the system controller controls the individual flow rate of the reductive gas supplied from at least said three ind pendently controlled reductive gas nozzles bas d on the desired film thicknesses.

9. Th oxidation system according to claim 7, wherein

the system controller sets controlling the flow rate of each reductive gas nozzle so as to provide the desired concentration profile in the longitudinal direction of the active oxygen species or the active hydroxyl species.